HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, Colorado 80527-2400

PATENT APPLICATION

ATTORNEY DOCKET NO. 200308654-1

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Chunqiang Tang

Confirmation No.: 6564

Application No.: 10/705,932

Examiner: Michael J. Hicks

Filing Date: November 13, 2003

Group Art Unit: 2165

Title: SAMPLE-DIRECTED SEARCHING IN A PEER-TO-PEER SYSTEM

Mail Stop Appeal Brief-Patents
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on December 3, 2008.

☒ The fee for filing this Appeal Brief is $540.00 (37 CFR 41.20).

☒ No Additional Fee Required.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

☐ (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d)) for the total number of months checked below:

☐ 1st Month $130	☐ 2nd Month $490	☐ 3rd Month $1110	☐ 4th Month $1730

☐ The extension fee has already been filed in this application.

☒ (b) Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account 08-2025 the sum of $ 540. At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees.

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Typed Name: Jane S. Kim
Signature: Jane S. Kim

Respectfully submitted,
Chunqiang Tang,
By Ashok K. Mannava
Ashok K. Mannava
Attorney/Agent for Applicant(s)
Reg No. : 45,301
Date : December 3, 2008
Telephone : (703) 652-3822

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Respectfully submitted,
Chunqiang Tang
By Ashok K. Mannava
Ashok K. Mannava
Attorney/Agent for Applicant(s)
Reg No.: 45,301
Date: December 3, 2008
Telephone: (703) 652-3822

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PATENT

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App. Ser. No.: 10/705,932

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s):	Chunqiang Tang	**Confirmation No.:**	6564
Serial No.:	10/705,932	**Examiner:**	Michael J. Hicks
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Commissioner for Patents
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APPEAL BRIEF - PATENTS

Sir:

This is an Appeal Brief in connection with the decisions of the Examiner in a Final Office Action mailed September 3, 2008, and in connection with the Notice of Appeal filed herewith. It is respectfully submitted that the present application has been more than twice rejected. Each of the topics required in an Appeal Brief and a Table of Contents are presented herewith and labeled appropriately.

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(1) Real Party in Interest

The real party in interest is Hewlett-Packard Development Company, L.P.

(2) Related Appeals and Interferences

There are no other appeals or interferences related to this case.

(3) Status of Claims

Claims 1-4, 6-22 and 24 are pending in the present application of which claims 1, 14, 18, and 22 are independent. Claims 5 and 23 were canceled. All pending claims 1-4, 6-22 and 24 are rejected. All pending claims 1-4, 6-22 and 24 are hereby appealed.

(4) Status of Amendments

No amendment was filed subsequent to the Final Office Action dated September 3, 2008.

(5) Summary of Claimed Subject Matter

Claims 1, 14, 18, and 22 of the present invention are independent claims at issue in this appeal. It should be understood that the citations below to the original disclosure as providing support for claimed features are merely exemplary and do not limit the claimed features to only those citations.

According to one embodiment in claim 1, there is provided a method for identifying samples to determine search results for a query in a peer-to-peer system, the method comprising:

receiving a query at a destination node (Fig. 1 at 130; specification at page 15, lines 10-13);

receiving samples from a first set of nodes proximally located to the destination node in an overlay network for the peer-to-peer system, the samples associated with information stored at the proximally located nodes (Fig. 1 at 131-136; specification at page 15, lines 19-22);

identifying and selecting, based on the samples received from the first set of nodes, a first node of the first set of nodes likely storing information associated with objects stored in the peer-to-peer system that are relevant to the query to determine search results for the query (Fig. 1 at 131-136; specification at page 15, lines 19-22);

forwarding the query to the identified first node (Fig. 1 at 136; specification at page 16, lines 1-4);

generating semantic vectors for the objects stored in the peer-to-peer system (Fig. 1 at V(Doc A); specification at, from page 14, line 19, to page 15, line 2);

hashing each of the semantic vectors to generate keys identifying locations in the overlay network to store key-value pairs for the objects, wherein the keys are the semantic vectors for the objects and the values include at least one of the objects and addresses for the objects (Fig. 1 at (V(Doc A), Y); specification at, from page 14, line 14, to page 15, line 2); and

storing the key-value pairs at the nodes associated with the identified locations in the overlay network wherein the stored key-value pairs associated with similar semantic vectors are

proximally located in the overlay network (Fig. 1 at (V(Doc A), Y); specification at, from page 14, line 19, to page 15, line 2).

According to one embodiment in claim 14, there is provided an apparatus for identifying samples to determine search results for a query in a peer-to-peer system, the apparatus comprising:

means for receiving a query at a destination node (Fig. 1 at 130 and Fig. 3 at control module 339; specification at page 15, lines 10-13, and page 27, lines 4-6);

means for receiving samples from a first set of nodes proximally located to the destination node in an overlay network for the peer-to-peer system, the samples associated with information stored at the proximally located nodes (Fig. 1 at 130-136 and fig. 3 at index module 335; specification at page 15, lines 19-22, and page 27, lines 20-23);

a storage device to store the received samples (Fig. 1 at 130 and Fig. 3 at indices 345; specification at page 27, lines 18 and 19);

means for identifying and selecting, based on the samples received from the first set of nodes, a first node of the first set of nodes likely storing information associated with objects stored in the peer-to-peer system that are relevant to the query to determine search results for the query (Fig. 1 at 131-136 and Fig. 3 at query module 335; specification at page 15, lines 19-22);

means for forwarding the query to the identified first node (Fig. 1 at 130 and 136 and Fig. 3 at the query module 335; specification at page 16, lines 1-4, and page 27, lines 11-13);

means for generating semantic vectors for the objects stored in the peer-to-peer system (Fig. 1 at V(Doc A) and Fig. 3 at index module 335; specification at, from page 14, line 19, to page 15, line 2, and page 27, lines 20-22);

means for hashing each of the semantic vectors to generate keys identifying locations in the overlay network to store key-value pairs for the objects, wherein the keys are the semantic vectors for the objects and the values include at least one of the objects and addresses for the objects (Fig. 1 at (V(Doc A), Y) and Fig. 3 at index module 335; specification at, from page 14, line 14, to page 15, line 2, and page 27, lines 20-22); and

means for storing the key-value pairs at the nodes associated with the identified locations in the overlay network wherein the stored key-value pairs associated with similar semantic vectors are proximally located in the overlay network (Fig. 1 at 130-136 and (V(Doc A), Y), Fig. 3 at indices 345, and Fig. 6 at a secondary memory 608 and a removable storage unit 614; specification at, from page 14, line 19, to page 15, line 2, and page 27, line 18).

According to one embodiment in claim 18, there is provided a computer readable storage device on which is embedded a program, the program performing a method, the method comprising:

receiving a query at a destination node (Fig. 1 at 130; specification at page 15, lines 10-13, and page 32, line 20);

receiving samples from a first set of nodes proximally located to the destination node in an overlay network for the peer-to-peer system, the samples associated with information stored at the proximally located nodes (Fig. 1 at 131-136; specification at page 15, lines 19-22);

identifying and selecting, based on the samples received from the first set of nodes, a first node of the first set of nodes likely storing information associated with objects stored in the peer-to-peer system that are relevant to the query (Fig. 1 at 131-136; specification at page 15, lines 19-22);

generating semantic vectors for the objects stored in the peer-to-peer system (Fig. 1 at V(Doc A); specification at, from page 14, line 19, to page 15, line 2);

hashing each of the semantic vectors to generate keys identifying locations in the overlay network to store key-value pairs for the objects, wherein the keys are the semantic vectors for the objects and the values include at least one of the objects and addresses for the objects (Fig. 1 at (V(Doc A), Y); specification at, from page 14, line 14, to page 15, line 2); and

storing the key-value pairs at the nodes associated with the identified locations in the overlay network wherein the stored key-value pairs associated with similar semantic vectors are proximally located in the overlay network (Fig. 1 at (V(Doc A), Y); specification at, from page 14, line 19, to page 15, line 2).

According to one embodiment in claim 22, there is provided a peer-to-peer system comprising:

a plurality of nodes in the system operating as a search engine configured to execute a query received by the search engine, each of the plurality of nodes comprising a storage device to store information (Fig. 1 at 130-136);

an overlay network implemented by the plurality of nodes (Fig. 2 at 240);

a plurality of indices stored at the plurality of nodes, each index including at least one semantic vector for an object (Fig. 1 at (V(Doc A), Y); specification at, from page 14, line 14, to page 15, line 2), and

the semantic vectors being hashed to generate keys identifying locations in the overlay network to store key-value pairs for the objects (Fig. 1 at (V(Doc A), Y); specification at, from page 14, line 14, to page 15, line 2),

wherein the keys are the semantic vectors for the objects and the values include at least one of the objects and addresses for the objects (Fig. 1 at (V(Doc A), Y); specification at, from page 14, line 14, to page 15, line 2),

wherein the key-value pairs are stored at the nodes associated with the identified locations in the overlay network, and the stored key-value pairs that are associated with similar semantic vectors are proximally located in the overlay network (Fig. 1 at (V(Doc A), Y); specification at, from page 14, line 14, to page 15, line 2);

wherein a first node in the search engine is configured to receive samples from the nodes proximally located to the first node in the overlay network, the first node utilizing the samples to identify and select an index of one of the other nodes to search in response to receiving the query (Fig. 1 at 131-136; specification at page 15, lines 19-22).

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(6) Grounds of Rejection to be Reviewed on Appeal

A. Whether claims 1-4, 6-22, and 24 were properly rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 7,039,634 to Xu et al. ("Xu").

(7) Arguments

The rejection of claims 1-4, 6-22, and 24 under 35 U.S.C. §102(e) as being anticipated by Xu should be reversed.

The test for determining if a reference anticipates a claim, for purposes of a rejection under 35 U.S.C. § 102, is whether the reference discloses all the elements of the claimed combination, or the mechanical equivalents thereof functioning in substantially the same way to produce substantially the same results. As noted by the Court of Appeals for the Federal Circuit in *Lindemann Maschinenfabrick GmbH v. American Hoist and Derrick Co.*, 221 USPQ 481, 485 (Fed. Cir. 1984), in evaluating the sufficiency of an anticipation rejection under 35 U.S.C. § 102, the Court stated:

> Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim.

Therefore, if the cited reference does not disclose each and every element of the claimed invention, then the cited reference fails to anticipate the claimed invention and, thus, the claimed invention is distinguishable over the cited reference.

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Claims 1-4, 6-22, and 24 were rejected under 35 U.S.C. §102(e) as being anticipated by Xu.

Claim 1 recites a method for identifying samples to determine search results for a query in a peer-to-peer system, the method comprising, *inter alia*, "**identifying and selecting, based on the samples received from the first set of nodes, a first node of the first set of nodes likely storing information associated with objects stored in the peer-to-peer system that are relevant to the query** to determine search results for the query." According to an embodiment described in the instant patent application, samples include information that "may be generated in the background, where the node is not processing a query," and may include "randomly selected documents stored at the node as well as documents that have high rates or are associated with recent queries." Page 10, lines 12-17.

Xu fails to teach identifying and selecting, based on samples received from a first set of nodes, a first node of the first set of nodes likely storing information associated with objects stored in a peer-to-peer system that are relevant to a query to determine search results for the query. Instead, Xu teaches that a destination node floods a query to surrounding nodes within a radius r. Xu at column 4, lines 35-38; column 7, lines 9-12; and column 8, lines 16-19. The flooding of a query to the surrounding nodes within a radius r in Xu does not teach receiving samples from the surrounding nodes and identifying and selecting one of the surrounding nodes based on the received samples as discussed for claim 1. The flooding of the query does not include identifying a first node likely storing information relevant to a query. Instead, the flooding sends to all nodes within a radius r, because there is no identification of single node or a

first node likely storing the relevant information. If Xu identified a single node or a first node likely storing the relevant information, then there would be no need to flood the query.

The Final Office Action at page 2 states that a first node of a first set of nodes is chosen "based on the semantic vector of the query and the semantic vectors of surrounding nodes." However, according to lines 1-8 of column 7 of Xu, in Fig. 1, a semantic query vector is routed to a selected node 115 "based on the semantic query vector falling in the zone owned by the peer search node 115." In Fig. 5 at step 525, the peer search node 115 may then search its indices for any key pairs that match the semantic query vector. At step 530, a determination is made whether there are any matching key pairs, and at step 535, information as pointed by a respective address index of a matching key pair is retrieved and stored. Xu at column 11, lines 26-30. A key pair includes a semantic vector and an address index. Xu at column 3, lines 16-20.

While Xu discloses key pairs are used, Xu fails to teach that the key pairs including semantic vectors and address indexes are **received from a first set of nodes**. There is no teaching or suggestion in Xu that the key pairs used by the peer search node 115 are samples received from other nodes and one of the other nodes is selected based on the samples. The rest of Xu's disclosure fails to overcome the foregoing deficiencies. Thus, Xu fails to teach identifying and selecting, based on samples received from a first set of nodes, a first node of the first set of nodes likely storing information associated with objects stored in a peer-to-peer system that are relevant to a query to determine search results for the query.

For at least the foregoing reasons, Xu fails to teach all of features of independent claim 1 and its dependent claims. It is respectfully submitted that the rejection of claim 1 and its dependent claims under 35 U.S.C. §102(e) as being anticipated by Xu should be reversed.

Independent claims 14, 18, and 22 each recite features similar to those discussed above for claim 1 as follows. Claim 14 recites "means for identifying and selecting, based on the samples received from the first set of nodes, a first node of the first set of nodes likely storing information associated with objects stored in the peer-to-peer system that are relevant to the query to determine search results for the query." Claim 18 recites "identifying and selecting, based on the samples received from the first set of nodes, a first node of the first set of nodes likely storing information associated with objects stored in the peer-to-peer system that are relevant to the query." Claim 22 recites "the first node utilizing the samples to identify and select an index of one of the other nodes to search in response to receiving the query."

Thus, for at least the same reasons set forth earlier with respect to claim 1, Xu fails to teach all of features of independent claims 14, 18, and 22 and their respective dependent claims.

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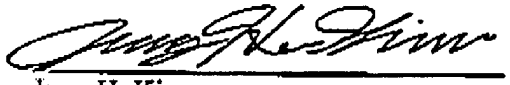
(8) Conclusion

For at least the reasons given above, the rejection of claims 1-4, 6-22, and 24 described above is improper. Accordingly, it is respectfully requested that such rejection by the Examiner be reversed and these claims be allowed. Attached below for the Board's convenience is an Appendix of claims 1-4, 6-22, and 24 as currently pending.

Please grant any required extensions of time and charge any fees due in connection with this Appeal Brief to deposit account no. 08-2025.

Respectfully submitted,

Dated: December 3, 2008

By 

Jung H. Kim
Registration No.: 51,299
(703) 652-3820

Ashok K. Mannava
Registration No.: 45,301
(703) 652-3822

MANNAVA & KANG, P.C.
11240 Waples Mill Road
Suite 300
Fairfax, VA 22030
(703) 865-5150 (facsimile)

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(9) Claim Appendix

1. (Previously Presented) A method for identifying samples to determine search results for a query in a peer-to-peer system, the method comprising:

receiving a query at a destination node;

receiving samples from a first set of nodes proximally located to the destination node in an overlay network for the peer-to-peer system, the samples associated with information stored at the proximally located nodes;

identifying and selecting, based on the samples received from the first set of nodes, a first node of the first set of nodes likely storing information associated with objects stored in the peer-to-peer system that are relevant to the query to determine search results for the query;

forwarding the query to the identified first node;

generating semantic vectors for the objects stored in the peer-to-peer system;

hashing each of the semantic vectors to generate keys identifying locations in the overlay network to store key-value pairs for the objects, wherein the keys are the semantic vectors for the objects and the values include at least one of the objects and addresses for the objects; and

storing the key-value pairs at the nodes associated with the identified locations in the overlay network wherein the stored key-value pairs associated with similar semantic vectors are proximally located in the overlay network.

2. (Original) The method of claim 1, further comprising:

comparing the query to information stored in the first node; wherein the information stored in the first node is associated with objects stored in the peer-to-peer network; and

generating search results including information stored in the first node associated with objects relevant to the query based on the comparison of the query to the information stored in the first node.

3. (Original) The method of claim 2, further comprising:

determining whether a quit threshold has been reached;

transmitting the search results to an initiator of the query in response to the quit threshold being reached; and

performing the following steps in response to the quit threshold not being reached:

identifying a second node likely storing information associated with objects stored in the peer-to-peer network that are relevant to the query based on samples received from a second set of nodes including the second node, wherein the second set of nodes are nodes proximally located to the first node in the overlay network; and

adding information stored in the second node to the search results; the added information being associated with objects that are relevant to the query.

4. (Previously Presented) The method of claim 3, wherein the quit threshold is associated with at least one of hops in the overlay network and whether the search results are improved by adding information to the search results from the second node.

6. (Previously Presented) The method of claim 1, further comprising:

generating the samples for the first set of nodes as a function of at least one of key-value pairs stored at each of the first set of nodes.

7. (Original) The method of claim 6, wherein generating the samples comprises:

generating a destination node semantic vector representative of objects associated with at least one of key-value pairs stored at the destination node and recent queries executed by the destination node;

generating a list of key-value pairs for each node of the first set of nodes, wherein each list includes key-value pairs associated with objects having semantics similar to the destination node semantic vector.

8. (Original) The method of claim 7, wherein identifying, based on the samples received from the first set of nodes, a first node of the first set of nodes likely storing information associated with objects stored in the peer-to-peer network that are relevant to the query comprises:

generating a semantic vector for each of the samples for the first set of nodes;

comparing the destination node semantic vector to each of the semantic vectors for the first set of nodes; and

identifying one of the semantic vectors for the first set of nodes closest to the destination node semantic vector.

9. (Previously Presented) The method of claim 1, further comprising:

identifying lower elements for the semantic vectors;

generating planes in the overlay network associated with the lower elements; and

performing the steps of claim1 for each of the planes.

10. (Previously Presented) The method of claim 1, further comprising:

storing indices of key-value pairs at the nodes;

replicating an index for a second node in the first node, wherein the second node is proximally located to the first node in the overlay network; and

identifying key-value pairs from the replicated index that are relevant to the query.

11. (Previously Presented) The method of claim 1, further comprising:

storing indices of key-value pairs at the nodes;

in the first node, replicating indices for a plurality of nodes in a region in the overlay network including the first node; and

identifying key-value pairs from the replicated indices that are relevant to the query.

12. (Original) The method of claim 2, wherein the first set of nodes are neighbor nodes to the destination node in the overlay network.

13. (Original) The method of claim 3, wherein the second set of nodes are neighbor nodes to the first node in the overlay network.

14. (Previously Presented) An apparatus for identifying samples to determine search results for a query in a peer-to-peer system, the apparatus comprising:

means for receiving a query at a destination node;

means for receiving samples from a first set of nodes proximally located to the destination node in an overlay network for the peer-to-peer system, the samples associated with information stored at the proximally located nodes;

a storage device to store the received samples;

means for identifying and selecting, based on the samples received from the first set of nodes, a first node of the first set of nodes likely storing information associated with objects stored in the peer-to-peer system that are relevant to the query to determine search results for the query;

means for forwarding the query to the identified first node;

means for generating semantic vectors for the objects stored in the peer-to-peer system;

means for hashing each of the semantic vectors to generate keys identifying locations in the overlay network to store key-value pairs for the objects, wherein the keys are the semantic vectors for the objects and the values include at least one of the objects and addresses for the objects; and

means for storing the key-value pairs at the nodes associated with the identified locations in the overlay network wherein the stored key-value pairs associated with similar semantic vectors are proximally located in the overlay network.

15. (Original) The apparatus of claim 14, further comprising:

means for comparing the query to information stored in the first node; wherein the information stored in the first node is associated with objects stored in the peer-to-peer network; and

means for generating search results including information stored in the first node associated with objects relevant to the query based on the comparison of the query to the information stored in the first node.

16. (Original) The apparatus of claim 15, further comprising:

means for determining whether a quit threshold has been reached;

means for transmitting the search results to an initiator of the query in response to the quit threshold being reached; and

means for performing the following functions in response to the quit threshold not being reached:

identifying a second node likely storing information associated with objects stored in the peer-to-peer network that are relevant to the query based on samples received from a second set of nodes including the second node, wherein the second set of nodes are nodes proximally located to the first node in the overlay network; and

adding information stored in the second node to the search results; the added information being associated with objects stored in the peer-to-peer system that are relevant to the query.

17. (Previously Presented) The apparatus of claim 16, wherein the quit threshold is associated with at least one of hops in the overlay network and whether the search results are improved by adding information to the search results from the second node.

18. (Previously Presented) A computer readable storage device on which is embedded a program, the program performing a method, the method comprising:

receiving a query at a destination node;

receiving samples from a first set of nodes proximally located to the destination node in an overlay network for the peer-to-peer system, the samples associated with information stored at the proximally located nodes;

identifying and selecting, based on the samples received from the first set of nodes, a first node of the first set of nodes likely storing information associated with objects stored in the peer-to-peer system that are relevant to the query;

generating semantic vectors for the objects stored in the peer-to-peer system;

hashing each of the semantic vectors to generate keys identifying locations in the overlay network to store key-value pairs for the objects, wherein the keys are the semantic vectors for the objects and the values include at least one of the objects and addresses for the objects; and

storing the key-value pairs at the nodes associated with the identified locations in the overlay network wherein the stored key-value pairs associated with similar semantic vectors are proximally located in the overlay network.

19. (Previously Presented) The computer readable storage device of claim 18, wherein the method further comprises:

comparing the query to information stored in the first node; wherein the information stored in the first node is associated with objects stored in the peer-to-peer network; and

generating search results including information stored in the first node associated with objects relevant to the query based on the comparison of the query to the information stored in the first node.

20. (Previously Presented) The computer readable storage device of claim 19, wherein the method further comprises:

determining whether a quit threshold has been reached;

transmitting the search results to an initiator of the query in response to the quit threshold being reached; and

performing the following steps in response to the quit threshold not being reached:

identifying a second node likely storing information associated with objects stored in the peer-to-peer network that are relevant to the query based on samples received from a second set of nodes including the second node, wherein the second set of nodes are nodes proximally located to the first node in the overlay network; and

adding information stored in the second node to the search results; the added information being associated with objects stored in the peer-to-peer system that are relevant to the query.

21. (Previously Presented) The computer readable storage device of claim 20, wherein the quit threshold is associated with at least one of hops in the overlay network and whether the search results are improved by adding information to the search results from the second node.

22. (Previously Presented) A peer-to-peer system comprising:

a plurality of nodes in the system operating as a search engine configured to execute a query received by the search engine, each of the plurality of nodes comprising a storage device to store information;

an overlay network implemented by the plurality of nodes;

a plurality of indices stored at the plurality of nodes, each index including at least one semantic vector for an object, and

the semantic vectors being hashed to generate keys identifying locations in the overlay network to store key-value pairs for the objects,

wherein the keys are the semantic vectors for the objects and the values include at least one of the objects and addresses for the objects,

wherein the key-value pairs are stored at the nodes associated with the identified locations in the overlay network, and the stored key-value pairs that are associated with similar semantic vectors are proximally located in the overlay network;

wherein a first node in the search engine is configured to receive samples from the nodes proximally located to the first node in the overlay network, the first node utilizing the samples to identify and select an index of one of the other nodes to search in response to receiving the query.

24. (Previously Presented) The system according to claim 22, wherein the first node is located in a region in the overlay network and the first node is configured to store indices from nodes in the region, wherein the first node is operable to search a plurality of indices likely to include information relevant to the query without forwarding the query to other nodes in the region.

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(10) Evidence Appendix

None.

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(11) Related Proceedings Appendix

None.